



Northwest  
Pipeline  
Corporation  
&  
The  
Alcan  
Solution



## **Alcan Project**

Northwest Pipeline Corporation's Alcan Pipeline Project is one of three competing proposals to transport natural gas from Alaska's North Slope to the lower 48 states. Alcan will deliver the gas sooner and at a cost comparable to the lowest estimates for competing projects. These advantages and others make Alcan a common sense solution for transporting the huge Alaskan gas supplies. This brochure briefly describes *The Alcan Solution*.

## **On the Cover**

Illustrative of one of the Alcan Pipeline Project's major advantages is this photo showing the Alaska Highway, which the project would follow, thus avoiding environmental damage to new areas and lessening the risk of cost overruns and construction delays.

# Alcan: The Common Sense Solution

## Why Alcan Deserves Your Support

The winter of 1976-77 has brought into sharp focus both our nation's dependence on natural gas and the need for additional supplies to be brought on stream as quickly as possible. Our nation's best hope for receiving large quantities of additional natural gas lies in development of the gas reserves on the North Slope of Alaska.

Three proposals are currently being considered by the federal government to transport these natural gas supplies to markets in the lower 48 states.

We believe that Northwest Pipeline Corporation's Alcan Pipeline Project deserves your support for the following major reasons:

**1** Alcan will deliver gas directly to all parts of the nation—East, Midwest and West.

**2** It will deliver the gas two years sooner than competing

proposals, thus protecting jobs in industries dependent upon natural gas.

**3** Alcan's 48-inch express system will transport gas for costs comparable to the lowest estimates for competing projects.

**4** In both Alaska and Canada, Alcan follows common utility and highway corridors, providing immediate access and thereby greatly minimizing the possibility of huge cost overruns and schedule delays that experts say are almost certain with the other projects.

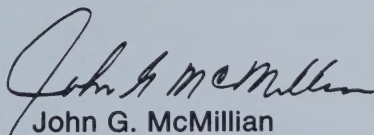
**5** Alcan avoids the Arctic National Wildlife Range and will do far less environmental damage than either competing proposal.

**6** Alcan retains the advantage of an overland pipeline system through Canada without forcing Canada to connect the Mackenzie Delta gas reserves before they're needed and without forcing on that country a route which is unacceptable from an environmental and native claims policy standpoint.

**7** Further, Alcan's conventional overland pipeline system is safer and more reliable than El Paso's proposed land-sea LNG system.

Recent reports by the U.S. Federal Power Commission and Canada's Berger Commission further support Alcan's common sense route. This brochure discusses these reports and other advantages of our project. We trust you'll find it interesting and informative. If you have questions or would like additional information, please don't hesitate to let us know.

Sincerely,



John G. McMillan  
Chairman and President  
Northwest Pipeline Corporation/  
Alcan Pipeline Company

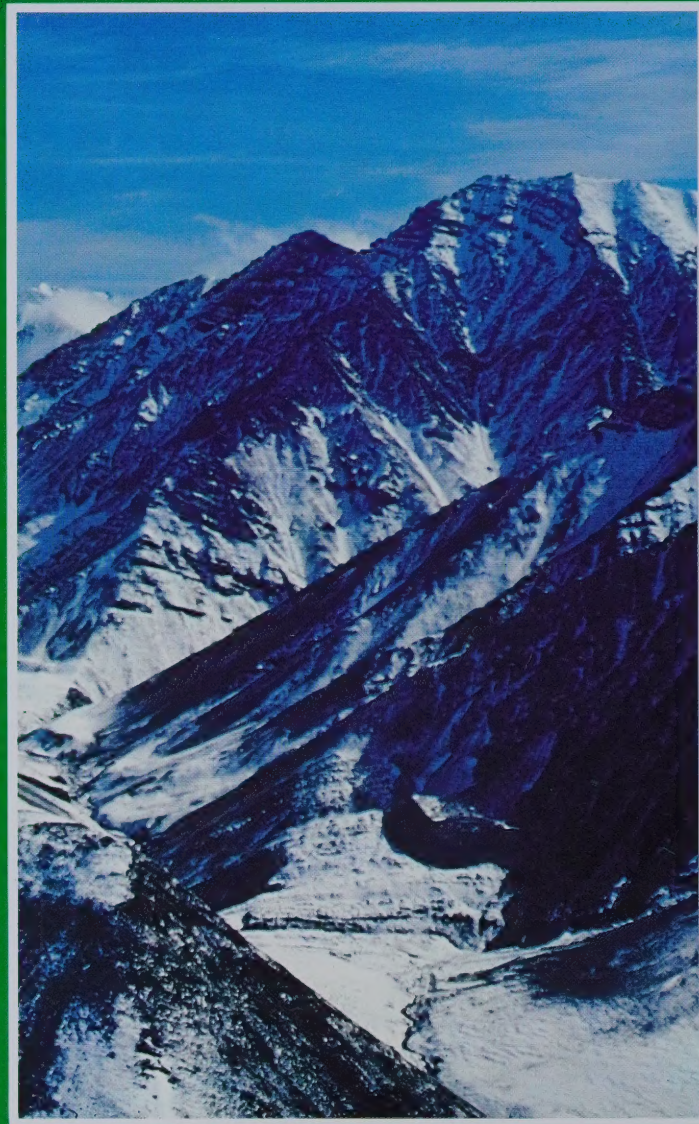
Northwest Pipeline Corporation/  
Alcan Pipeline Company,  
P.O. Box 1526,  
Salt Lake City, Utah 84110  
(801) 534-3600



One of the most formidable challenges facing America today is the achievement of energy self-sufficiency. Inherent in this tremendous national task is the exploration and timely development of natural gas resources both in the contiguous United States and in Alaska.

The North Slope of Alaska contains substantial volumes of natural gas. Proved recoverable reserves at Prudhoe Bay Field are estimated to be in excess of 26 trillion cubic feet of gas. How and when these reserves will be delivered to energy-hungry markets in the lower 48 states is a vital national priority, requiring a careful but early decision. During 1977, the federal government has the responsibility of recommending a route and a system for the transportation of Alaskan gas. The ultimate decision will be made by the President and the Congress only after substantial input from all levels of government. There are currently three proposals awaiting this decision: the Alcan Pipeline Project, the Arctic Gas plan and the El Paso liquefied natural gas (LNG) proposal.

Northwest Pipeline believes that the key decision which federal agencies, the President,



and Congress must make under the Alaska Natural Gas Transportation Act is to select the route and system which presents the fewest problems for both the United States and Canada and which can deliver the gas sooner with the least risk of cost overruns and construction delays.

In all likelihood, the LNG proposal advanced by El Paso would be selected only if Canada would not permit an over-

land pipeline system through its territory. An overland pipeline system is substantially better than an LNG system on the primary counts of efficiency, delivered costs and reliability. There is another important consideration: Will the President or Congress want this substantial block of energy all delivered to the West Coast when most of the gas is needed in the Midwest and East?

### The Alcan Route

The route advanced by the Alcan Project participants would originate in the Prudhoe Bay Field and would roughly parallel the Trans-Alaska oil pipeline system from Prudhoe Bay for approximately 540 miles to Delta Junction, south of Fairbanks, Alaska. From Delta Junction Alcan's 48-inch diameter system would then parallel the Alcan Highway. It would follow an existing pipeline corridor and the Alaska Highway through much of British Columbia, before taking a slightly more direct route to a point east of Grande Prairie, Alberta, where it would then follow existing rights-of-way of Alberta Gas Trunk Line Company Limited to James River.

From here, a 42-inch diameter pipeline will carry approximately 71 percent of the gas to Monchy, Saskatchewan, where it will be delivered into the proposed Northern Border Pipeline for redelivery to the U.S. Midwest and East. The remainder of the gas will be transported through a new 36-inch diameter pipeline along existing corridors to Kingsgate, British Columbia, for redelivery to western U.S. markets.

Northwest Pipeline's Canadian partners, who will be constructing the



# The Alcan Solution

Canadian portion of the Alcan Project, are Alberta Gas Trunk Line Company Limited (AGTL), Westcoast Transmission Company Limited, and Foothills Pipe Lines Ltd.

## Competing Proposals

When the hearings began before the Federal Power Commission in early 1975, there were just two alternatives being considered for the transportation of Alaskan gas. One was the Arctic Gas project which would require first, a United States decision to cross the environmentally sensitive Arctic National Wildlife Range; second, a Canadian decision to develop the Mackenzie Delta gas reserves in the early 1980's; and third, settlement of the serious land claims and rights of the natives in the Northwest Territories. The second alternative was the El Paso project which would require all of the gas to be liquefied and then transported to California by means of a specially designed LNG tanker system.

## Fairbanks Alternative

It soon became apparent that both of these proposals had substantial disadvantages

and that an overland pipeline along the Alaska Highway, which has been called the Fairbanks Corridor Route, or the "Fairbanks Alternative," might be more in the public interest.

In view of the strong support for such a route by staffs at the Federal Power Commission and Department of the Interior and by leading environmental organizations, Northwest Pipeline began exploring the concept with Westcoast and AGTL,

## Legend

- Alcan Pipeline Company
- Foothills Pipe Lines Ltd.
- Westcoast Transmission Company Limited
- Alberta Gas Trunk Line Company Limited
- Northwest Pipeline Corporation
- Pacific Gas Transmission Company/PG&E
- Proposed Northern Border Pipeline
- ▲ Import Points





the only major gas transmission companies operating in western Canada. The investigation revealed that the Fairbanks Alternative would indeed have substantial advantages for the United States and Canada. In addition to the obvious environmental benefits, the logistical, economic and construction advantages made such a system far less vulnerable to cost overruns and to schedule delays.

In view of these advantages, Alcan Pipeline Company, a wholly owned subsidiary of Northwest Pipeline Corporation, announced its intention to propose the Alcan Project last spring and formally applied to the FPC on July 9, 1976.

Following several months of hearings and numerous staff reports, the Commission announced its recommendations on May 2, 1977. Both the chairman and the vice chairman of the FPC gave the Alcan Project their unqualified endorsement. Two other FPC Commissioners gave qualified support to the Arctic Gas proposal, conditioning their approval on a decision by the Canadian government to develop reserves

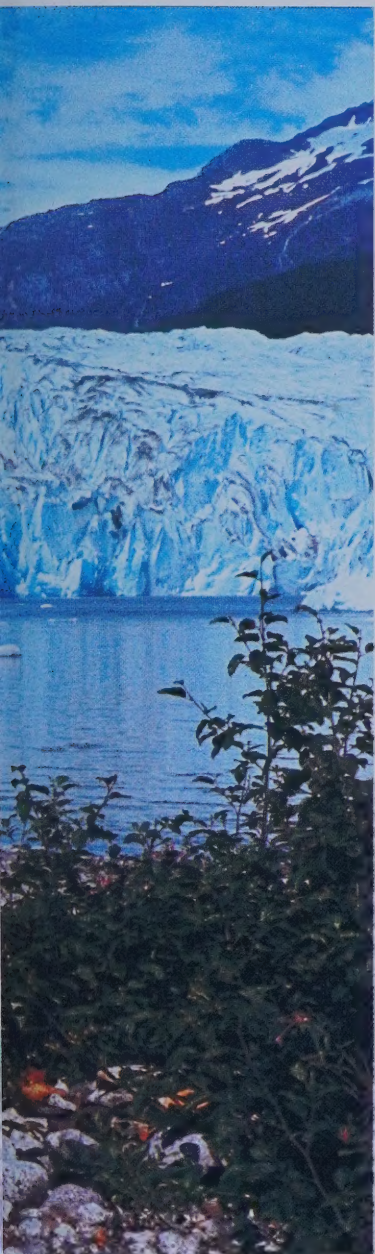


in the Mackenzie Delta simultaneously with those at Prudhoe Bay, and indicating that if Canada decided against near-term development of the Mackenzie Delta reserves that they would then support the Alcan Pipeline Project.

Shortly after the FPC decision, a Department of Transportation (DOT) report to the FPC was

made public, casting grave doubts on the entire construction proposal of Arctic Gas. The report was viewed as extremely significant since the DOT's Office of Pipeline Safety has the primary responsibility for ensuring the safety and reliability of gas pipeline operations in the United States.





across the North Slope, thus multiplying environmental damage to totally unacceptable levels.

### **Alcan Advantages**

The Alcan route is best for several reasons. The most important is that by following existing transportation corridors and by utilizing existing pipeline rights-of-way in Canada, the project substantially reduces risk of cost overruns and schedule delays. In fact, it is estimated that the Alcan system can be constructed and placed in service two years sooner than the Arctic Gas proposal. This advantage is in accord with Section 2(3) of the 1976 Act which finds the expeditious construction of a system for delivery of Alaskan natural gas to the United States to be in the national interest. The natural gas crisis which has seriously affected many parts of the country this winter, emphasizes the importance of early deliverability.

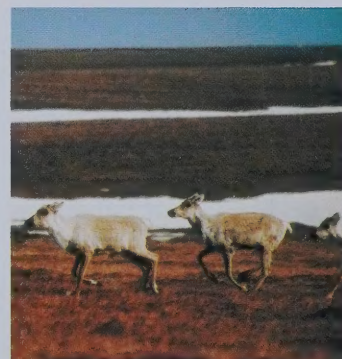
The DOT stated that it "is very dubious" concerning the feasibility of snow road construction, as proposed by Arctic Gas, along the North Slope of Alaska, which includes the environmentally sensitive Arctic National Wildlife Range. If snow road construction proved impossible, Arctic Gas would require gravel roads and workpads

Alcan's proposed use of existing pipeline and highway corridors also is in conformity with the requirements set forth in an amendment to Section 28 of the Mineral Leasing Act. The amendment requires joint uses of rights-of-way in order to "make the best possible

# The Alcan Solution

use of the land and to prevent additional swaths of rights-of-way across public lands when not necessary." The Alcan Project fulfills this Congressional directive. The policy of following existing rights-of-way also received support in the DOT report previously mentioned, which stated, "It does not appear that there would be serious environmental objections to Alcan." A fundamental reason, the report stated, was that Alcan proposes to follow existing rights-of-way.

The utilization of established corridors, in the vicinity of all-weather roads, gives Alcan clear logistical, economic and maintenance advantages. Where such corridors are utilized, men and equipment can be transported and deployed more efficiently, thus providing more reliable construction schedules. This, in turn, yields substantial economic advantages and reduces maintenance problems. Further, Canadian partner companies will provide immediate support facilities and personnel for the Canadian portion of the project.





### **Canadian Interests**

Since Canada must approve any pipeline which would transport Alaskan gas across its territory, Canadian needs and interests must be considered in connection with an overland route. The Arctic Gas project proposes to connect to Canada's Mackenzie Delta reserves and transport both Alaskan and Mackenzie Delta gas simultaneously in the same system. This, of course, ties United States energy interests to Canadian energy policy. It is evident that Canada will follow its own best interests, so that United States interests will be served only if they coincide with Canadian interests and energy policy.

This is significant in two respects. First, natural gas consumption in Canada has recently been growing at a much lower rate than anticipated, while gas supplies from traditional sources, particularly in Alberta, have been increasing. For example, it has been reported that there are at least 20 trillion cubic feet of gas reserves in the Province of Alberta which are presently developed

but unconnected, compared with only about 5 trillion cubic feet in the Mackenzie Delta. Thus, Canada's need for gas from its Mackenzie Delta reserves appears much less urgent in the near term than is the United States' need for Alaskan natural gas.

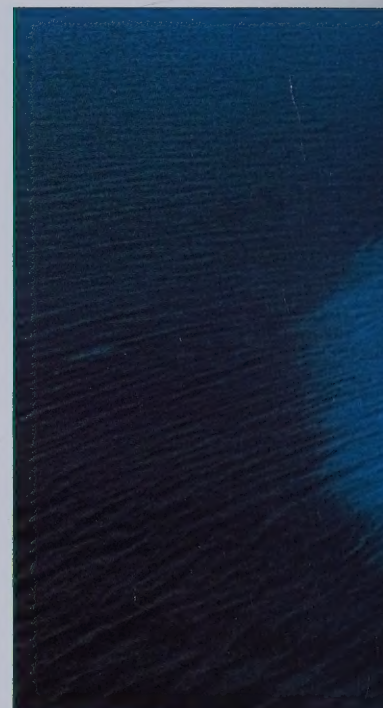
Second, difficult problems involving native land claims exist both in the Mackenzie Valley and in the northern Yukon. The Berger Commission, which the Canadian government established to study these problems, recommended on May 9, 1977 that no pipelines ever be allowed to traverse the North Slope of the Yukon and the Northwest Territories and that a 10-year delay be imposed on any pipeline construction in the Mackenzie River Valley of the Northwest Territories. While final action on these native claims issues cannot be predicted, it would be questionable for the United States to select a transportation system that is vulnerable to long delays and massive cost overruns which cannot be resolved in this country. In contrast, Alcan entirely avoids the areas of concern in Justice Berger's report. It is anticipated that Canada can settle the native claims

issues well in advance of Alcan's scheduled pipeline construction.

The Alcan system offers Canada the alternative of connecting the Mackenzie Delta reserves in the future either along the Mackenzie Valley or through the Yukon along the Dempster Highway to connect with the Alcan system.

### **Alaskan Interests**

Finally, the Alcan route would avoid the destruction of the wildlife, wilderness and recreational values of the Arctic National Wildlife Range. The Range, which is one of the last large wildlife refuges in the world, preserves significant environmental and wildlife values. These values exist for the benefit of all







# The Alcan Solution



Americans, both today and in the future. Their destruction should not be undertaken lightly, particularly when a viable alternative which avoids such destruction is available.

Also, the Alcan Pipeline Project has the flexibility to provide a sound and stable energy base for an expanding Alaskan economy. Industrial, mineral and agricultural development will surely follow gas availability, and in the long term, this will provide the jobs and economic base for orderly and continuing growth in Alaska.

## In Conclusion

The system finally selected will help meet United States energy needs for several decades.

Alcan's realistic capital investment and lowest transportation cost to the consumer, its ability to deliver the gas at least two years sooner, and the options it provides Canada make the proposal the most promising solution for transporting Alaskan gas to markets in the lower 48 states.

## Advantages of the Alcan System

Alcan alone can begin deliveries after a three-year construction period. Both other projects require five years before deliveries commence.

Alcan offers direct pipeline deliveries to all parts of the nation—the East, Midwest and West.

Alcan minimizes environmental and socio-economic impacts because it follows existing highway and utility corridors where past developments have already created disruption and, with time, been mitigated.

Alcan's route steers clear of existing wilderness areas, unlike El Paso which would gouge its pipeline corridor through the Chugach National Forest and increase tanker traffic in the productive fishery areas of the south Alaska coast, and unlike Arctic Gas which would invade the great Arctic National Wildlife Range.

Alcan's 48-inch express system will transport gas for costs comparable to the lowest estimates for competing projects.

Alcan, unlike Arctic Gas, does not require Canada to prematurely develop gas reserves in the Mackenzie Delta. This is significant since Delta reserves are at present insufficient to warrant a pipeline. Further, unlike Arctic Gas, Alcan steers clear of the primitive Mackenzie Valley where development would jeopardize presently unsettled native land and political representation claims. Yet, Alcan does provide Canada the potential for delivering Mackenzie Delta gas if and when Canada deems it to be in that country's best interests.

Alcan, unlike El Paso, does not involve potentially dangerous and less reliable LNG conversion and tanker transportation.



# Conclusions of Non-Partisan Studies

**1** Federal Power Commission (FPC) hearings began in May, 1975 and continued through May, 1977, with final results among the four FPC Commissioners as follows: Alcan, 2; Arctic Gas, 2 (conditional); and El Paso, 0.

The two commissioners recommending Arctic Gas did so on condition that Canada simultaneously develop Mackenzie Delta reserves. If Canada decides against such development, the commissioners indicated that Alcan would receive the votes of all four commissioners. The FPC's report to President Carter stated the following about each project:

*Alcan:* "No doubt the Alcan route promises the least environmental impact, if proper mitigative actions are taken during final design, construction and operation . . . Alcan will be able to commence deliveries six months prior to El Paso and nine months to one year prior to Arctic because of its considerably shorter construction schedule . . . The likelihood of weather-induced cost overruns is almost nil for

Alcan. Alcan has the highest net national economic benefit—\$15.66 billion."

*Arctic Gas:* "Arctic has the highest exposure (to cost overruns) . . . Since Arctic is depending on winter construction, snow roads and snow workpads, an unusually short winter or unusually severe weather could delay completion . . . Arctic has the greatest risk of major cost overruns beyond our estimate, primarily because of its difficult winter construction schedule."

*El Paso:* "El Paso's LNG plant and ship costs make up approximately 50 percent of the system's total capital costs. On expansibility grounds, the El Paso system is inferior to either Alcan or Arctic . . . El Paso's facilities are subject to the intense seismic activities of south-central Alaska. The proposed pipeline crosses three major active faults . . . Failure of any part of the system could quickly halt delivery of Prudhoe Bay gas, and a major disaster could stop delivery for several months to a year or more." Further, FPC studies indicate that El Paso's transportation

costs will be 38 percent higher than Alcan's—\$1.09 per million BTU for El Paso as opposed to \$.79 for Alcan.

**2** The Department of Transportation, in a report of April 6, 1977, comparing the three routes, comments on each project:

*Alcan:* "From the available information, it does not appear that there would be serious environmental objections to Alcan."

*Arctic Gas:* "DOT is very dubious as to whether the (Arctic Gas) snow road approach for construction is feasible . . . There is a serious question as to whether enough snow can be collected from natural sources and/or manufactured artificially under the conditions which exist on the North Slope to permit this approach to be effective. . . . Perhaps of even greater concern is how maintenance and repair operations might be carried out on the completed pipeline in snow road sections in summer when there is no snow road remaining. . . . The Arctic Gas proposal is by far the least desirable from an environmental perspective."

*El Paso:* "The proposed locations for both the exporting and receiving LNG terminals are in areas of the highest seismic activity in the U.S."

**3** Justice Thomas R. Berger of the British Columbia Supreme Court issued an initial report on May 9, 1977 after nearly two years of hearings on Native Claims problems in northern Canada. He recommended that no pipeline ever be allowed to cross the North Slope of the Yukon and that any pipeline in the Mackenzie River Valley be delayed for 10 years. Justice Berger commented on both the Alcan and Arctic Gas routes:

*Alcan:* "Some of the concerns about wildlife, wilderness and engineering and construction that led me to reject the corridor across the Northern Yukon (the Arctic Gas route) do not appear to apply in the case of the Alaska Highway (Alcan) route. It is a route with an established infra-structure. In my view, the construction of a pipeline along this route would not threaten any substantial populations of any species in the Yukon or in Alaska." Justice Berger stated that he had not examined the social or economic impact of a pipeline along the Alaska Highway and therefore could not endorse such a route.

*Arctic Gas route:* "There should be no pipeline across the Northern Yukon. It would entail irreparable environmental



losses of national and international importance. And a Mackenzie Valley pipeline should be postponed for ten years. If it were built now, it would bring limited economic benefits, its social impact would be devastating, and it would frustrate the goals of native claims."

**4** In a risk analysis prepared for the Environmental Protection Agency and issued April 1, 1977 by Resource Planning Associates, Inc., Alcan exhibited a one-year to three-year earlier delivery date for all probability ranges, indicating that Alcan will get North Slope natural gas to the lower 48 states faster than either competing project. The report commented on all proposals:

*Alcan:* "The factors of primarily summer construction, relatively easy year-round access, and a route through established utility and transportation corridors, combine to create a high degree of project predictability and a relatively low risk of construction-schedule delays."

*Arctic Gas:* "Analysis of the key risk factors involved in the Arctic Gas pipeline-construction plan indicates a high probability that Arctic Gas would experience significant difficulties in

maintaining adequate construction progress over the portion of its route that lies north of 60 degrees N. Over this 1,215-mile segment of the pipeline, Arctic Gas would encounter the most severe winter weather, significant frozen-soil ditching difficulties, and strict seasonal limitations on the construction period, and would rely extensively on a snow road/pad as a working and travel surface."

*El Paso:* "LNG-terminal siting is an extremely controversial issue in California. The approval process is therefore likely to be lengthy at all levels, and subsequent federal-state interaction could be complex and time-consuming."

*For further information contact:*

Joseph N. Vallely, director,  
Public Relations Division,  
Northwest Pipeline Corporation/  
Alcan Pipeline Company  
P. O. Box 1526,  
Salt Lake City,  
Utah 84110  
Tel.: (801) 534-3531.

# Facts About Alcan

## **Sponsor:**

Alcan Pipeline Company, a subsidiary of Northwest Pipeline Corporation, P. O. Box 1526, Salt Lake City, Utah 84110, (801) 534-3600. Northwest Pipeline is about midway in size among the top 35 natural gas transmission companies and operates a transmission system of 4,600 miles. Assets total in excess of \$575 million.

## **Pipeline:**

2,754 miles (731 miles in Alaska and 2,023 in Canada; 2,078 total miles of 48-inch pipe, 395 miles of 42-inch line and 281 miles of 36-inch line).

## **Design Capacity:**

2.6 billion cubic feet per day of Alaskan gas; expanded capacity to 3.4 billion cubic feet.

## **Fuel Consumption:**

Alcan, 6.4 percent of receipt volumes; Arctic Gas, 6.9 percent; El Paso, 10.9 percent.

## **Cost Estimate:**

In 1975 dollars, the Alaskan portion of the Alcan Project will cost \$2.4 billion, and the Canadian

portion will cost \$2.7 billion. Alcan's total costs, including additional facilities in the lower 48 states, are \$6.7 billion.

## **Comparative Costs:**

\$8.8 billion for Arctic Gas and \$6.6 billion for El Paso.

## **Canadian Associates:**

Alberta Gas Trunk Line Company Limited and its subsidiary, Alberta Gas Trunk Line (Canada) Limited; Westcoast Transmission Company Limited; and Foothills Pipe Lines Ltd.

## **Transportation Costs:**

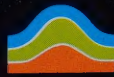
Transportation costs per million BTU for the period 1984-1987: Alcan, \$2.02; Arctic, \$2.21; and El Paso, \$3.04.

## **Delivery Date:**

Two years sooner than either competitive proposal. (Alcan, 1981; Arctic, 1983; El Paso, 1983.)



**NORTHWEST PIPELINE CORPORATION**



P.O. Box 1526 Salt Lake City, Utah 84110